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ASHEVILLE, NC 28801

EXAMINER

CHAI, LONGBIT

ART UNIT PAPER NUMBER

2131

DATE MAILED: 12/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/936,315

Applicant(s)

SCHEIDT, EDWARD M.

Examiner

Longbit Chai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 October 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
4a) Of the above claim(s) 1-32 and 37-41 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 33-36 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 17 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Original application contained claims 1 – 41. Claims 1 – 32 and 37 – 41 have been withdrawn and the amendment filed on 10/21/2005 have been entered and made of record. Presently, pending claims are 33 – 36.

Response to arguments

2. Applicant's arguments with respect to the subject matter of the instant claims have been fully considered but are not persuasive. See the following Office action.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **the drawings of message exchange protocol** as per pending claims 33 and 35 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

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consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of **the first paragraph** of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 33 and 35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

This is because the claim limitation "generating, by the first party, a first asymmetric key pair based on the base, prime, and sub-prime parameters, and a shared key based on the second public key" is not clearly and specifically addressed in the specification. One skilled in the art clearly would not know how to use the claimed invention to make and use the same of the claimed invention; especially, regarding the limitation "**a shared key based on the second public key**" after generating, by the first

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party, a first asymmetric key pair based on the base, prime, and sub-prime parameters. In light of the specification, this particular shared key is created from the public keys exchanged between two parties in light of the well-known **Diffie-Hellman common key mechanism**. However, the well-known "middle-man attack" problem of the Diffie-Hellman common key mechanism remains unresolved as per this instant pending application, i.e., the middle-man is able to attack the key exchange protocol between two parties (which is also presented in the primary reference of Chen PN = 5,796,833). **Therefore, one skilled in the art clearly would not know how to successfully use the claimed invention to secure communication between the TX / RX entities as recited in the claim because once the common / shared key is compromised due to the well-known middle-man attack, the encrypted respective identification numbers would be unsecured as well.**

Any other claims not addressed are rejected by virtue of their dependency should also be corrected.

The following is a quotation of **the second paragraph** of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 33 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33 and 35 are indefinite because the claim language "net label" is not specifically defined in the specification as per (a) **how the net label is related to**

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“respective identification numbers” recited in the claim limitation – i.e. what exactly the “respective identification numbers” are referred to in light of “net label”, and (b) it is unclear, particularly, **“how to use this net label specifically in establishing a secure communication channel”** as recited in the claim limitations.

Any other claims not addressed are rejected by virtue of their dependency should also be corrected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A person shall be entitled to a patent unless –

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 33 – 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (Patent Number: 5796833), in view of Elgamal (Patent Number: 5657390).

As per claim 33 and 35, Chen teaches a method of establishing a secure communication channel, comprising:

sending, by a first party, a secure call notification to a second party (Chen: Column 11 Line 40: session key protocol requires a connection (or call) request between two parties);

accessing, by the first and second parties, base, prime, and sub-prime parameters (Chen: Column 10 Line 41 – 47: the two prime numbers p and q are interpreted as prime and sub-prime to meet the claim language);

generating, by the second party, a second asymmetric key pair comprising a second public key and a second private key, based on the base, prime, and sub-prime parameters (Chen: Column 10 Line 41 – 47: the two prime numbers p and q are interpreted as prime and sub-prime to meet the claim language);

sending, by the second party to the first party, the second public key (Chen: Column 7 Line 59 – 60 and Column 11 Line 4 – 6);

generating, by the first party, a net label, a private label, a random value, a first asymmetric key pair comprising a first public key and a first private key based on the base, prime, and sub-prime parameters, and a shared key based on the second public key (Chen: Column 11 Line 20 – 25, Column 2 Line 59 – 60 and Column 7 Line 59 – 60: the common key is qualified as the shared key); However, Chen does not disclose expressly a generating net label, a private label, and a random value.

Elgamal teaches generating net label, a private label, and a random value (Elgamal: Column 7 Line 16 – 19: **the random value and the net label / private label are equivalent to the challenge data that are used to generate the secure session key in establishing the secure communication channel as taught by Elgamal**).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teaching of Elgamal within the system of Chen because (a) Chen discloses the needs of session key establishment protocol (Chen:

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Column 11 Line 40 & Figure 2) and (b) Elgamal teaches a more efficient handshake protocol associated with session key generation scheme (Elgamal: Column 2 Line 3 – 4).

encrypting, by the first party, the net label, the private label, and the random value, using the shared key (Elgamal: Figure 6: the challenge data is encrypted by server write key and besides the server write key and client write key is assume to be the same as the shared key as taught by Chen);

sending, by the first party to the second party, the encrypted net label, the encrypted private label, the encrypted random value, and the first public key (Elgamal: Figure 6);

generating, by the second party, the shared key based on the first public key Chen: Column 7 Line 59 – 60);

decrypting, by the second party, the encrypted net label, the encrypted private label, and the encrypted random value using the shared key (Elgamal: Figure 6); and

exchanging, by the first and second parties, respective identification numbers to establish the secure communication channel (Elgamal: Figure 6: This is the SSL (Security Session Layer) communication channel as taught by Elgamal).

As per claim 34, Chen as modified further teaches the secure call notification is a first secure call notification, the .net label is a first net label, the private label is a first private label, the random value is a first random value, the shared key is a first shared key, the encrypted net label is a first encrypted first net label, the encrypted private label

is a first encrypted first private label, and the encrypted random value is a first encrypted first random value further, the method further comprising:

designating, by one of the first party and the second party, either of the first party and the second party as a sender, and the other of the first party and the second party as a non-sender; suspending, by the sender, the secure communication channel between the first party and the second party; establishing, by the sender, a communication channel with a third party; sending, by the sender, a second secure call notification to the third party; accessing, by the third party, the base, prime, and sub-prime parameters; generating, by the third party, a third asymmetric key pair comprising a third private key and a third public key, based on the base, prime, and sub-prime parameters; sending, by the third party to the sender, the third public key; generating, by the sender, a second private label, a second net label, a second random value, a fourth asymmetric key pair comprising a fourth public key and a fourth private key based on the base, prime, and sub-prime parameters, and a second shared key based on the third public key; encrypting, by the sender, the second private label, the first net label, and the first random value, using the second shared key, to provide an encrypted second private label, a second encrypted first net label, and a second encrypted first random value; sending, by the sender to the third party, the encrypted second private label, the second encrypted first net label, the second encrypted first random value, and the fourth public key; generating, by the third party, the second shared key based on the third public key; decrypting, by the third party, the encrypted second private label, the second encrypted first net label, and the second encrypted first

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random value, using the second shared key; suspending, by the sender, the secure communication channel between the sender and the third party; sending, by the sender to the third party and the non-sender, a conference call notification; encrypting, by the sender, the second net label and the second random value, using one of the first public key and the second public key, to provide a first encrypted second net label and a first encrypted second random value; generating, by the sender, a first error detection value for the first encrypted second net label and the first encrypted second random value; sending, by the sender to the non-sender, the first encrypted second net label, the first encrypted second random value, and the first error correction value; generating, by the non-sender, a second error detection value, for the first encrypted second net label and the first encrypted second random value; checking, by the non-sender, the validity of the first encrypted second net label and the first encrypted second random value by comparing the first and second error detection values; decrypting, by the non-sender, the first encrypted second net label and the first encrypted second random value, using one of the first private key and the second private key; encrypting, by the sender, the second net label and the second random value, using the third public key, to provide a second encrypted second net label and a second encrypted second random value; generating, by the sender, a third error detection value, for the second encrypted second net label and the second encrypted second random value; sending, by the sender to the third party, the second encrypted second net label, the second encrypted second random value, and the third error correction value; generating, by the third party, a fourth error detection value, for the second encrypted second net label and the

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second encrypted second random value; checking, by the third party, the validity of the second encrypted second net label and the second encrypted second random value by comparing the third and fourth error detection values; and decrypting, by the third party, the second encrypted second net label and the second encrypted second random value, using third private key (see the same rationale addressed above in rejecting the claim 33 and 35).

As per claim 36, Chen as modified teaches deriving, by the first party, an error checking code for each of the respective other parties from the respective encrypted net labels and the respective encrypted random values (Chen: Column 1 Line 65 – 67, Column 6 Line 38 – 49, Column 6 Line 59 – 65 and Column 7 Line 13 – 26: a hash value is considered as an error checking code);

sending, by the first party, the respective error checking codes to the respective other parties (Chen: Column 1 Line 65 – 67, Column 6 Line 38 – 49, Column 6 Line 59 – 65 and Column 7 Line 13 – 26); and

confirming, by the other parties, validity of the respective encrypted net labels and the respective encrypted random values using the respective error checking codes (Chen: Column 7 Line 13 – 26).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Longbit Chai whose telephone number is 571-272-3788. The examiner can normally be reached on Monday-Friday 8:00am-4:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ayaz R. Sheikh can be reached on 571-272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


LBC

Longbit Chai
Examiner
Art Unit 2131


Primary Examiner
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12/1/05